

GONORRHOEA IN THE MEDIAN RAPHE OF THE PENIS* CASE REPORT AND A SURVEY OF THE LITERATURE

BY

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Few case reports of gonorrhoea of the penoscrotal raphe have been published in Great Britain. The incidence of ducts in the raphe—whether infected or not—has rarely been discussed, and their origin and histology have received scant attention.

Case Report

A taxi driver aged 22, who had been married for 4 years, reported at the Swansea V.D. Clinic on June 15, 1959. There was no history of previous V.D.

Extramarital intercourse had occurred on June 1, a urethral discharge was noted on June 7, and on June 13 a mark was noticed on the penis which had not been seen before.

Examination (June 15). There was a purulent urethral discharge and a discoloured streak (2½" long)—continuous but not uniform—in part of the penile raphe. Smears from pus expressed from a tiny sinus in the streak and from the urethra showed typical intracellular gonococci. When seen again on June 29 the patient said the discharge had stopped on the day after the first attendance and treatment; the proximal end of the streak showed two openings but no pus could be expressed. No urethral discharge was present. On July 15 and 27 much pus was obtained from the small sinus at the distal end of the streak and gonococci were found in it. There was no urethral discharge and the urine was clear on both occasions. Fresh purulent discharge from both urethra and streak was seen on September 16 and gonococci were found in smears from both sites (Fig. 1, opposite).

The patient was not seen again until December 30, 1959, when the discharge had recurred after recent marital intercourse. He had an inflammatory phimosis and—for the first time—the streak was tender. For a few days the patient was treated with saline only; on January 12, 1960, gonococci were cultured from the urethral discharge but not from the scanty sinus secretion. On no occasion was urine seen to escape from the streak. On February 15 circumcision and excision of the whole tract was carried out by Mr. J. Glyn Bowen.

Eventually, on February 25, the patient's wife attended. Cultures from urethra and cervix were positive for gonococci, and it appeared that she rather than the duct had caused the recurrences in the patient.

Pathology (Report by Dr. O. G. Williams).—"Material consists of a rather corrugated strip of skin 2" long and approximately ¼" wide. Longitudinal section of the tissue shows a sinus track opening at one end (the fraenal end) on the skin surface and coursing rather irregularly beneath the epidermis. Owing to tissue shrinkage the track appears rather irregularly in the serial sections, and it is not certain, therefore, whether there is one common track or several discrete tracks ranged separately in longitudinal fashion; there is, however, only one skin opening demonstrable. The sinus tissue is lined by stratified epithelium, transitional for the most part, but with areas of definite squamous cell formation (intercellular bridges seen with phosphotungstic acid—haematoxylin stain). Around the track is a well marked lymphocytic and plasma cell infiltrate" (Figs 2 to 4, see p. 211).

Discussion

The following questions arise and the answers have been sought in the literature:

- (1) Is gonorrhoea of the ducts in the median raphe as uncommon as the literature suggests?
- (2) What is the incidence of the uninfected, usually unnoticed, ducts?
- (3) What are the views as to their formation?
- (4) What is their histology?
- (5) Why does the urethra escape infection so often?
- (6) Why does gonococcal infection of the scrotal raphe appear to be even more uncommon than that of the penile raphe?

Survey of the Literature

(a) *Infected Ducts*.—63 cases of gonococcal infection of the penoscrotal raphe have been traced in the literature (Pick, 1889; Jadassohn, 1894; Reichmann, 1899; Möller, 1904; Stieda, 1905; Gutmann, 1910; Hensel, 1910; Lenartowicz, 1913;

* Short paper read to M.S.S.V.D. on April 29, 1960.



FIG. 1.—Infected duct in the raphe after "relapse".

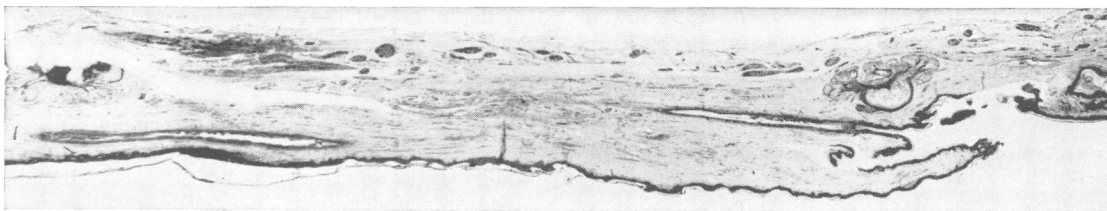


FIG. 2.—Epithelium-lined tract and skin, undersurface of penis $\times 3$.

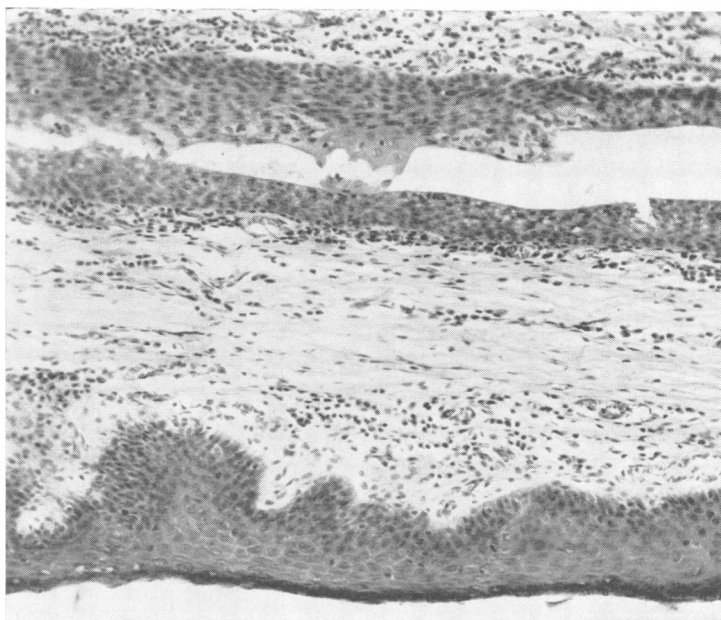


FIG. 3.—Stratified epithelium lining epithelial tract and inflammatory cells $\times 160$.

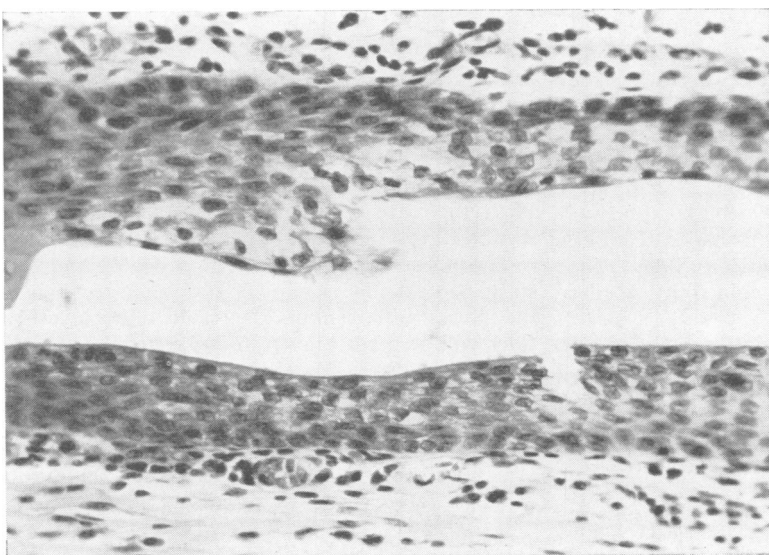


FIG. 4.—Detail $\times 375$.

Gutmann, 1914; Nobl, 1917; Milian, 1919; Sowade, 1921; Oppenheim, 1922; Thomson, 1923; Rupel, 1924; Becker, 1924; Pontopiddan, 1926; Hecht, 1926; Gnocchi, 1926; Nardelli, 1926; Milian, 1926; Ginella, 1928; Tedeschi, 1928; Balog, 1932; Gougerot, Burnier, and Tissot, 1933; Rupel, 1933; Neff, 1936; Bise, 1937; Harner and Kelly, 1943; Harkness, 1945; Mee, 1949; Rajam and Rao, 1949; Rajam, Rao, and Rangiah, 1953). Also, in the course of the discussions of the papers by Milian (1919) and by Gnocchi (1926) and Nardelli (1926), several speakers mentioned having seen similar cases. To qualify for inclusion in this total of 63 cases, a subcutaneous cord, duct, or tract within the raphe must have been mentioned in the text or evidenced by an illustration. Cases in which the canal communicated with the urethra were, of course, omitted.

In 33 additional cases the infected lesions described were near the raphe or fraenum (Ödmansson, 1885; Touton, 1889; Jadassohn, 1890; Touton, 1892; Jadassohn, 1894; Róna, 1897; Pezzoli, 1900; Lanz, 1901; Bruhns, 1904; Gutmann, 1910; Hübner, 1913; Milian, 1919; Mühlpfordt, 1924; Szathmáry, 1927; Bise, 1937; Kroll and Cohart, 1944; Marmell, 1952; Hirschmann, 1952; Byers and Bradley, 1953*).

Another eight case histories deal with gonococcal ulcers (Tschernogubow, 1910; Szathmáry, 1927; Lowry and Franks, 1943; Harkness, 1945*) and cysts (Gutmann, 1914; Okawa, 1929; Gougerot and others, 1933*) within the raphe.

In only three instances was the scrotal raphe exclusively involved and in five the condition extended into it.

In 46 of the 63 certain cases, the urethra was expressly said to be free from infection, whereas fourteen had concurrent gonococcal urethritis.

Clinically, the lesion was usually non-tender; in fact, the patient was often quite unaware of it. The danger of auto-re-infection was stressed by many authors, and—as the urethra so frequently escaped—a surgical cure for this kind of gonorrhoea was recommended by Rupel (1933).

The lesion was seen in cases in which the raphe was very tortuous (Möller, 1904), or Y-shaped (Hensel, 1910), or made two S-curves (Stieda, 1905). The name "ductus rhapshealis" was coined by Möller (1904).

29 papers refer to the histological appearances,† 21 of which indicate that the canal was lined exclusively or predominantly by squamous epithelium.

Jadassohn (1890) and Möller (1904) found stratified squamous epithelium with gonococci in the central part of the duct but columnar epithelium without gonococci in its lateral ramifications. Neff (1936) saw typical stratified squamous epithelium in the anterior portion of the canal while posteriorly the lining had the appearance of transitional epithelium.

A dozen papers, and again especially the earlier ones, deal with possible embryological implications.

(b) *Non-gonorrhoeal Cases*.—Canals in the raphe without gonococci were described by Balzer and Souplet (1893), Róna (1897), Gutmann (1914), and Lamb (1943)*.

Congenital cysts in the raphe were studied by Mermet (1895), Thöle (1898), Englisch (1902), Gutmann (1914), Hajós (1926), Okawa (1929), Gougerot and others (1933), Prakken (1933), Neff (1936), Wooldridge (1955), and other workers. Wooldridge remarked that "congenital anomalies . . . affecting the median raphe have gone almost unreported".

Paschkis (1902) examined several hundred *post mortem* specimens and found twelve with "accessory ducts" in the penis.

Meyer (1911) observed two praeputial ducts in the raphe of fetuses, with epithelium similar to that of the urethra. He explained how these ducts were formed by non-elimination of redundant epithelial tissue separated from the urethral groove. As conditions for persistence of epithelial remnants were less favourable in the scrotal portion of the urethra, he expected accessory canals to occur most rarely in that region.

Johnson (1920), who saw cystic epithelial ducts in the median raphe of an 88-mm. human embryo, believed that they had been cut off from the urethra.

Ottow (1930) examined 500 newborn male infants for rapheal cysts and discovered three small cysts with an epidermoid lining in the region of the fraenum.

Harkness (1945) wondered whether the median raphe did at times contain a modified epithelium. With this possibility in view he examined many sections, but failed to verify it.

With these ideas in mind, Dr. O. G. Williams has started to examine a number of raphe specimens in the "Swiss roll" fashion. The results of his investigations will be made known in due course.

Summary

The literature on gonococcal infections and structural anomalies of the median penoscrotal raphe is reviewed. A recent case is described and

* In some instances several cases described by the same author fall into different categories in the above survey. The relevant papers have been indicated on each occasion.

† Over half of them appeared before 1914.

questions on the origin and incidence of the potentially infected ducts are discussed.

The photomicrographs were prepared by the Department of Medical Illustration, Cardiff Royal Infirmary, and the colour photograph by Mr. Tal L. Jones, Pontardulais, Glam.

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ADDENDUM

Herbut (1952), who discussed the embryological and pathological implications of the rapheal structures, saw a teratoid cyst of the perineal raphe lined by stratified squamous epithelium.

Thompson (1959) described a non-gonococcal sinus tract in the penile raphe and showed a lacrimal probe *in situ*; the tract was lined by stratified squamous epithelium. Liang (1960) excised a cyst and a canal of the genito-perineal raphe and found multiple stratified squamous epithelium. The author has recently seen a patient at Cardiff Royal Infirmary Dermatological Clinic (Dr. Hodgson) with a very prominent perineal raphe. A tender nodule could be felt in it 4 in. from the anus. This had troubled the patient for 4 years and caused him to seek medical advice. At the site of the nodule the raphe appeared to end abruptly and was invisible for a further 1½ in., after which it reappeared and continued in a normal fashion. Biopsy failed to show the presence of a canal.

**Gonorrhée du raphé médian du pénis
Observation d'un cas et analyse de la littérature**

Résumé

L'auteur passe en revue la littérature sur les infections gonococciques et les anomalies structurales du raphé pénoscrotal médian. Il décrit un cas récent et discute l'origine et l'incidence de ces canicules et leurs infections.